R E M A R K S

Status of the Claims

Claims 1-13 are pending in this application. Claims 5-10 and 12 have been withdrawn from consideration. No claims have been canceled. Claim 13 has been added. Support for new claim 13 is found at page 12, lines 14-20 and Figure 1A.

Arguments on the Obviousness Rejection

Again, Applicants submit that the 5th embodiment of Fukuda fails to disclose or suggest each and every element of the present invention. Particularly, Fukuda fails to disclose or suggest that the solidified material is used for preventing the raw material melt from being supercooled.

The Examiner argues that the meaning of the term surface as used in the claims is encompassed by the cited references. Applicants submit that the word "surface" as recited in claim 1 represents the top surface of the raw material melt, i.e. the boundary of the melt and encapsulant. This is demonstrated in the specification at page 12, lines 5-6, which recites "the surface of the raw material melt (reference A in FIG. 1A)." See also page 14, lines 21-22, which recite "while pressing the surface of the raw

material by the encapsulant 2." This is also illustrated in FIG. 1A, where reference A denotes the top surface of the raw material melt.

Applicants submit that the word "surface" has an ordinary meaning as used in a dictionary. The online dictionary Merrian-Webster Online Dictionary defines surface as the exterior or upper boundary of an object or body. In the present specification, "the top layer of the raw material melt" corresponds to the "upper boundary". In the case of a liquid, "surface" means the top layer of an area of water or land, according to Oxford Advanced Learner's Dictionary. When a liquid is placed in a container having an opening on the top, one of ordinary skill in the art would understand that the surface of the liquid is the top layer of the liquid, which does not come into contact with the container.

In view of the above arguments, Applicants submit that "surface" in claim 1 does not correspond to the boundary between the polycrystal or solid at the bottom and raw material melt as suggested by the Examiner. As such, Applicants submit that the fifth embodiment of Fukuda is not within the scope of the present claim 1.

Applicants also submit that one feature of the present invention is to leave a solid raw material in a part of the raw material melt in a process for producing a compound

semiconductor single crystal. This solid raw material is present to prevent the raw material melt from being supercooled. Preventing the raw material melt from being supercooled will prevent the promotion of a number of nuclei on the surface of the melt and generation of a twin crystal or polycrystal. As a result, a high quality single crystal can be produced without the use of a seed crystal. This is explained at page 8, lines 2-8 of the specification.

On the other hand, in Taniguchi, the single crystal is grown from the surface of the raw material melt. However, Taniguchi does not teach or suggest a solid raw material in the raw material melt.

Also in the fifth embodiment of Fukuda a portion of the raw material melt is permitted to solidify by cooling. This is so that the solidified material is used like a seed crystal. Fukuda fails to disclose that the solidified material is used to prevent supercooling. Moreover, Fukuda fails to recognize that by preventing supercooling one can prevent the formation of twin crystals or polycrystals and a number of nuclei forming on the surface of the melt.

Fukuda's failure to recognize the benefits of preventing supercooling are evident in the fact that Fukuda fails to recognize the importance of a temperature gradient to prevent supercooling. In the present invention, the temperature

gradient of the raw material melt is set to be <10°C/cm^2 in order to prevent supercooling. Please see Figure 1A, where the temperature of the raw material melt is demonstrated to show the control of a single crystal growing from the surface of the raw material melt while leaving a part of the raw material being solid at the bottom of the crucible. In comparison, in Fukuda the temperature gradient is set to be 22 or 42°C/cm^2.

In light of the above arguments, Applicants submit that the combination of Fukuda, Dutta, Kingery and Taniguchi fail to disclose or suggest the feature of leaving a solid raw material in the melt to prevent supercooling. Applicants submit that one of ordinary skill in the art would not be motivated to combine the disclosures to achieve the present invention without focusing on the problem of supercooling that Fukuda fails to address.

As such, Applicants respectfully request that this rejection be withdrawn and the claims be allowed.

Conclusion

As Applicants have addressed and overcome all rejections raised by the Examiner, Applicants respectfully request that the rejections be withdrawn and that the claims be allowed.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully

requested to contact the undersigned at the telephone number below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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